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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/507,079	02/18/2000	Masataka Kadowaki	10876.45US01	8450 10

23552 7590 10/02/2003

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EXAMINER

RIDLEY, BASIA ANNA

ART UNIT PAPER NUMBER

1764

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/507,079

Applicant(s)

KADOWAKI ET AL.

Examiner

Basia Ridley

DR

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 4, 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9 and 12-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 7. 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species 1, Species i and Species A, claims 1-9 and 12-14, in Paper No. 9 is acknowledged. Claim(s) 9-10 is/are withdrawn from further consideration pursuant to 37 CFR 1.142(b).

2. Claim(s) 4 is/are withdrawn from further consideration by the examiner pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no (allowable) generic or linking claim.

Claim(s) 4 recite(s) the cooling unit including a heat sink adjacent to the outer surface of the gas passing tube. Said claim(s) is/are drawn to a nonelected species because cooling unit of elected Species A, as described in specification (P15/L10-12) comprises a water type cooling unit and not a heat sink type cooling unit.

Abstract

3. The abstract of the disclosure is objected to because it is too long, as it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Drawings

4. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see P10/L13-14). See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected because Table 1, which is included as part of the drawings is not described in the Brief Description of the Drawings. It is not clear if Table 1 is part of the drawings

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or part of the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim(s) 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by De Rycker et al. (USP 2,887,365).

Regarding claims 13-14, De Rycker et al. discloses a catalytic reaction device comprising:

- a gas passing tube (3) that has the catalyst bed (4);
- at least one gas blending unit (9), for blending part of the gas that is passing through the catalyst bed further from an inner surface of the gas passing tube (3) and remaining part of the gas that is passing through the catalyst bed nearer to the inner surface of the gas passing tube (3) at a point within the catalyst bed (4);
- further including a cooling unit (6) for cooling the catalyst bed from outside upstream from the gas blending unit.

Instant claim(s) 13-14 structurally read(s) on the system of De Rycker et al.

8. Claim(s) 1-3, 5, 7 and 12-14 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Trocciola et al. (USP 5,330,727).

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Regarding claim 1-3, 5, 7 and 12 Trocciola et al. discloses a CO remover comprising:

- an air mixer (19) for mixing air with hydrogen-rich gas including CO to generate mixed gas;
- a selective oxidative catalytic device (20, 30) for selectively oxidizing the CO by having the mixed gas pass through a selective oxidative catalyst bed (22, 32);
- the selective oxidative catalytic device comprising a gas passing tube (21, 31) that has the selective oxidative catalyst bed (22, 32); and
- at least one gas blending unit (18, 24, 34), for blending part of the mixed gas that is passing through the selective oxidative catalyst bed (22, 32) further from an inner surface of the gas passing tube (21, 31) and remaining part of the mixed gas that is passing through the catalyst bed (22, 32) nearer to the inner surface of the gas passing tube (21, 31) at a point within the selective oxidative catalyst bed;
- further comprising a cooling unit for cooling the selective oxidative catalyst bed from outside upstream from the gas blending unit (C7/L11-31);
- wherein the cooling unit includes a channel adjacent to an outer surface of the gas passing tube, through which cooling medium passes (C7/L11-31);
- wherein the gas blending unit (24, 34) is formed from an element disposed so as to partially obstruct the gas passing tube (Fig. 1);
- wherein the element (24, 34) is circularly disposed around the inner surface of the gas passing tube (Fig. 1);
- wherein a length between a start of the selective oxidative catalyst bed in a direction of a flow of the mixed gas and the gas blending unit (18) is no shorter than 1/3 of a length between the start of the selective oxidative catalyst bed and the end of the selective oxidative catalyst bed in the direction of the flow of the mixed gas (Fig. 1).

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Regarding claims 13-14, Trocciola et al. discloses a catalytic reaction device comprising:

- a gas passing tube (21, 31) that has the catalyst bed (22, 32);
- at least one gas blending unit (18, 24, 34), for blending part of the gas that is passing through the catalyst bed (22, 32) further from an inner surface of the gas passing tube (21, 31) and remaining part of the gas that is passing through the catalyst bed (22, 32) nearer to the inner surface of the gas passing tube (21, 31) at a point within the catalyst bed (Fig. 1);
- further including a cooling unit for cooling the catalyst bed from outside upstream from the gas blending unit (C7/L11-31).

Instant claim(s) 1-3, 5, 7 and 12-14 structurally read(s) on the system of De Rycker et al.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim(s) 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trocciola et al. (USP 5,330,727), as applied to claim 7 above.

Regarding claim 8, Trocciola et al. discloses all of the claim limitations as set forth above.

Additionally the reference discloses the CO remover wherein a portion of the internal sectional area of the gas passing tube is obstructed by the element. While the reference does not explicitly disclose the specific percentage of the internal sectional area which is being obstructed, the size of the element, and therefore the specific percentage of the internal sectional area which is being obstructed is not considered to confer patentability to the claims. As the amount of cooling

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provided to the remover is variable(s) that can be modified, among others, by adjusting said size of the element, and therefore the specific percentage of the internal sectional area which is being obstructed, with said cooling increasing as the size of the element and the specific percentage of the internal sectional area which is being obstructed is increased, the precise size of the element would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed size of the element and the specific percentage of the internal sectional area which is being obstructed cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the size of the element and the specific percentage of the internal sectional area which is being obstructed in the remover of Trocciola et al. to obtain the desired cooling (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

11. Claim(s) 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trocciola et al. (USP 5,330,727), as applied to claims 1 and 7 above, in view of De Rycker et al. (USP 2,887,365).

Regarding claim 6 and 9, Trocciola et al. discloses all of the claim limitations as set forth above, but the reference does not disclose said element projecting inward from the inner surface of the gas passing tube wherein said element is a washer ring.

De Rycker et al. teaches a reactor for performing exothermic gas reactions (C1/L15-35) wherein the reactor comprises:

- a gas passing tube (3) that has a catalyst bed (4); and

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- at least one gas blending unit (9), for blending part of the gas that is passing through the catalyst bed (4) further from an inner surface of the gas passing tube (3) and remaining part of the gas that is passing through the catalyst bed (4) nearer to the inner surface of the gas passing tube (3) at a point within the catalyst bed;
- further comprising a cooling unit (6) for cooling the catalyst bed from outside upstream from the gas blending unit (9);
- wherein the cooling unit (6) includes a channel adjacent to an outer surface of the gas passing tube (3), through which cooling medium passes (Fig. 1);
- wherein the gas blending unit (9) is formed from an element disposed so as to partially obstruct the gas passing tube (Fig. 1);
- wherein the element (9) is circularly disposed around the inner surface of the gas passing tube (Fig. 1);
- wherein said element projects inward from the inner surface of the gas passing tube (Fig. 1); and
- wherein said element is a washer ring (Fig. 1).

Further De Rycker et al. teaches that the disclosed reactor structure offers an advantage of providing reactor with even temperatures throughout the catalyst bed and which provides more structure resistant to breaking and deformation (C1/L36-C3/L40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the CO remover of Trocciola et al. as taught by De Rycker et al. for the purpose of providing reactor with even temperatures throughout the catalyst bed and which provides more structure resistant to breaking and deformation.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was

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commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

13. In view of the foregoing, none of the claims are allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (703) 305-5418. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (703) 308-6824.

The fax phone number for Group 1700 is (703) 872-9311 (for Official papers after Final), (703) 872-9310 (for other Official papers) and (703) 305-6078 (for Unofficial papers). When filing a fax in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley
Examiner
Art Unit 1764

BR


JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

BR
September 22, 2003